Space Weather Forecast

Issued on Sunday, 25 September 2022 at 01:18 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Minor Geomagnetic Storm day 2 from possible CME influence. Daily chance of Minor Radio Blackouts (R1) throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity, as measured by GOES-16 and 17 satellites, has been Low, with several Common class flares originating from two sunspot regions, AR3107 and AR3110.
There are currently six numbered active regions on the visible disc, and a new unnumbered region near centre disc. The largest group AR3110 located on the northeast limb, continues to grow with some development of the intermediate and trailing spots. The remaining regions mostly cover the southern hemisphere.
Previously analysed CMEs from 21st and 22nd may give some glancing influence at Earth either late on the 25th or more likely during 26th, however confidence is low, and an arrival early on 27th is also possible.

Solar Wind / Geomagnetic Activity: The solar wind, as measured by DSCOVR and ACE at L1, was at mostly slightly elevated levels and showed a mostly flat trend. The number of particles comprising the wind was at mostly Average levels. The magnetic field associated with the wind was at Weak levels, with the important north/south component often in the south pointing orientation. Corresponding geomagnetic activity was mostly Quiet to Unsettled (Kp 1 to 3), with an Active (Kp 4) interval 24/0300-0600UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be low to moderate, with further common-class flares expected with an ongoing daily 50% chance of isolated moderate-class flares. The main flare risk remains from the two aforementioned sunspot regions.

Solar Wind / Geomagnetic Activity: The slightly elevated fast wind from a coronal hole influence may decline a little over the next two days. There is a low chance of reaching G1 especially during day 2 from possible glancing CME influence. Any fast wind related to a southern coronal hole and affecting Earth late in the period may well be limited, with G1 currently assessed as being unlikely. In summary, geomagnetic activity will probably remain mostly below G1 level through the period.

Energetic Particles / Solar Radiation: No solar radiation storms are expected, although there is a very slightly increasing risk due to the usual westward advance of the more active sunspot groups across the facing side of the Sun.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	30	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	50	50	50	50
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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